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(54) IMPROVEMENTS IN STRUCTURAL BEAMS

(71) We, WALTER HOLME & SONS LIMITED, a British Company of Ruthven Road, Litherland, Liverpool L21, 2PE, do hereby declare the invention, for which we pray that a Patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention concerns structural timber beams, and it has for its object to provide a beam of simple construction which can be built up from quickly and easily prefabricated parts. Another object of the invention is to provide a beam which can be built up from the standard components to different lengths. A further object is to provide a beam which can, if desired, be formed as an arch beam.

According to this invention, the beam comprises an upper and a lower flange held vertically spaced apart and united by vertical webs with upper and lower marginal parts of said web received and secured in longitudinal grooves in the flanges, there being a longitudinal space between adjacent ends of at least two longitudinally adjacent webs at least at the top with a bridge piece between the spaced ends and also received and secured in the adjacent flange part.

A beam according to the invention can be fabricated easily utilising timber of standard lengths for the flanges and webs. A plurality of webs, all to standard dimensions, can be united to upper and lower flanges comprising or built from standard battening, and spaces can be left between some of the webs. Where there is a space, a bridge piece is provided. The bridge pieces can be of different lengths so that the overall length of a beam is adjusted to suit span requirements.

Where a space is left between adjacent web ends, said ends can be parallel, with bridge pieces at both the top and bottom, or said ends can be relatively inclined so that either no bridge piece is used at the bottom or a bridge piece shorter than the top bridge piece is used at the bottom. The relative lengths of top and bottom spacings can be determined by structural loading requirements the bridge pieces forming struts between webs, so limiting movement.

The invention also enables beams to be built which are initially slightly arched so that dead weight deflection is offset.

The flanges can be grooved or recessed centrally along facing surfaces to receive the marginal web parts thus providing an 'I' section assembly.

Embodiments according to the invention will now be described by way of example with reference to the accompanying drawings in which:—

Figure 1 is a fragmentary perspective view of one arrangement.

Figure 2 is an elevation of a part of a beam according to the form shown in Figure 1,

Figure 3 is a fragmentary exploded perspective view of another arrangement,

Figure 4 is a similar view of another arrangement.

Referring firstly to Figures 1 and 2, a beam is built up to desired length from upper and lower flanges 10, 10' and webs 11, upper and lower marginal parts of the web being received in recesses or grooves 12 made centrally along the facing surfaces of the flanges so that an I-section structure is built. It will be noted that a space S is provided between one pair of adjacent web ends and that upper and lower bridge pieces 13 are located in the flange grooves the ends of the bridge pieces abutting the adjacent web ends. A beam will, in practice, be built up to some length, with bridged spaces as appropriate and as will be seen some web ends can abut as shown

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at 14. The web ends can be arranged so that a wider space or gap is left at the top than at the bottom, or a space left at the top only, for example as shown in Figs. 3 and 4.

In the embodiments illustrated in Figure 3, the flange is made in sections 10*a* and the web is hollow and comprises side panels 15, 15 and top and bottom battens 16, 16, with the battens projecting beyond the panels. The sections are grooved appropriately at 10*b*.

As shown in Figure 3, the spacing between the adjacent web ends is such that a gap is left therebetween at both top and bottom, each gap accommodating a bridge piece 13 against which the respective web ends abut.

In Figure 4, the web is also shown built from side panels 15, 15 and battens 16, and side battens 17, 17 are secured one along each side at both top and bottom, so that the battens 16 are held therebetween. Figure 4 also shows an arrangement in which the adjacent web ends incline V-fashion, a bridge piece 13 being secured at the top only. Where a built up web is used, the battens 16 can be grooved out at each side to receive marginal parts of the side panels to provide flush side surfaces.

In all embodiments, bridge pieces can extend into the space and the adjacent web ends can be parallel or tapering, in the latter case with or without a lower bridge piece.

Attention is directed to our previous Patent Specification No. 1258252 with regard to Section 9 of the Patents Act 1949.

WHAT WE CLAIM IS:—

1. A structural timber beam comprising an upper and a lower flange held vertically spaced apart and united by vertical webs with upper and lower marginal parts of said webs received and secured in longitudinal grooves in the flanges, there being a longitudinal space between adjacent ends of at least two longitudinally adjacent webs at least at the top with a bridge piece between the spaced ends and also received and secured in the adjacent flange part.

2. A structural beam as claimed in Claim 1, wherein the flanges are formed in sections which receive the marginal parts between them.

3. A structural beam as claimed in Claim 1 or 2, wherein bridge pieces are provided at the top and bottom between at least two longitudinally adjacent webs, the bridge piece at the top being longer than the bridge piece at the bottom.

4. A structural beam as claimed in Claim 1 or 2 wherein a bridge piece is provided at the top and the web ends therebelow abut.

5. A structural timber beam substantially as herein described with reference to the accompanying drawings.

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1367893 COMPLETE SPECIFICATION

2 SHEETS *This drawing is a reproduction of the Original on a reduced scale*

Sheet 1

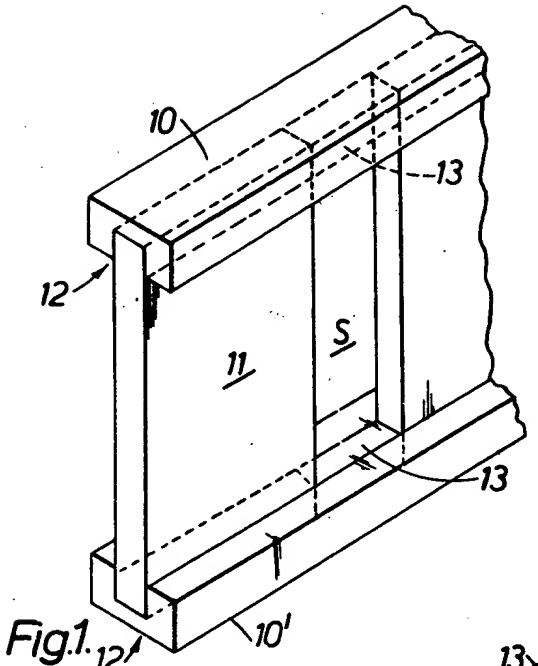

Fig.1.

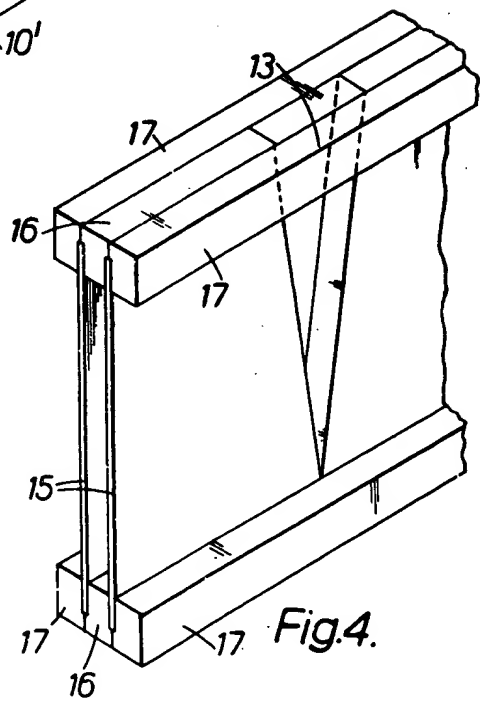

Fig.4.

1367893 COMPLETE SPECIFICATION
2 SHEETS *This drawing is a reproduction of the Original on a reduced scale*
Sheet 2

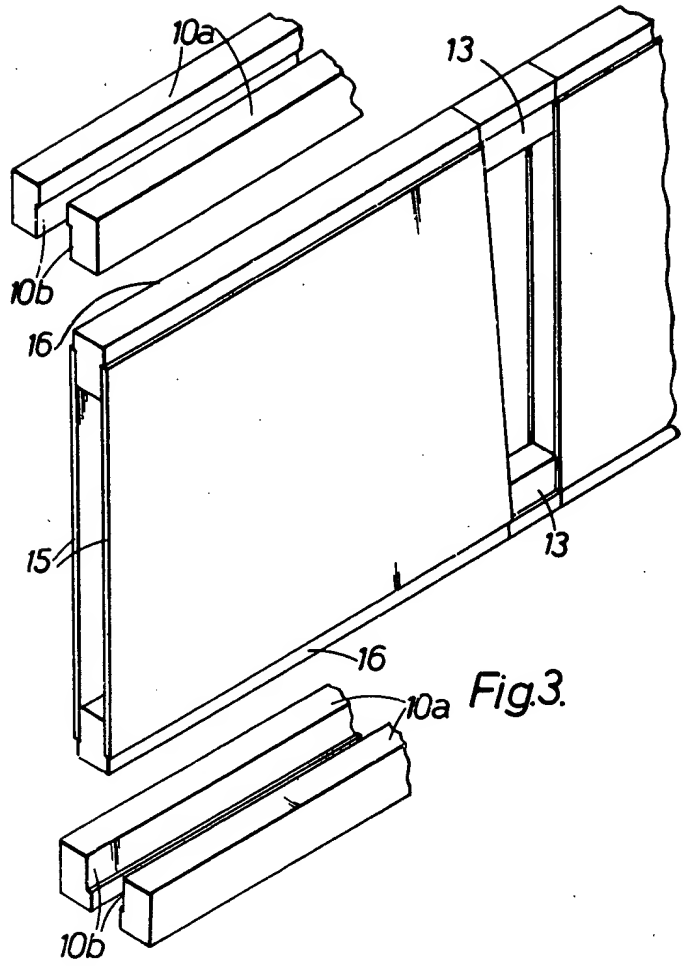

Fig.3.

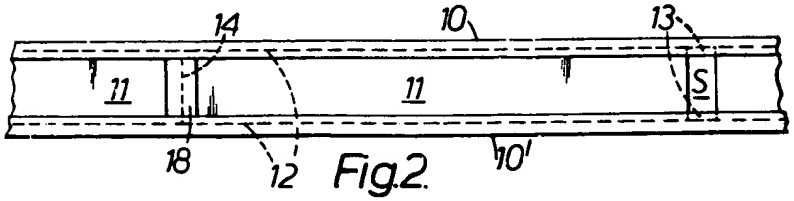

Fig.2.